HEAVIEST RAINFALL IN THE BRITISH ISLES.

The Scientific American for November 24, 1917 (p. 379), states that during a more or less general heavy rainstorm in southern England on the night of June 28, 1917, a rainfall measurement of 9.84 inches was recorded at Bruton, Somerset. This was the heaviest 24-hour rainfall ever recorded in the British Isles up to the time of writing.

The same paragraph states that the afternoon thunderstorm at Campden Hill, Kensington, London, on June 16, 1917, gave a fall of 4.65 inches in 24 hours (see the MONTHLY WEATHER REVIEW, September, 1917, p. 453–4).

Reports for subsequent months, published in "Nature" (London), show that the Summer and Fall of 1917 were unusually rainy and stormy in the British Isles. Further interesting details will be given when the 1917 volume of "British Rainfall" is available.—C. A. jr.

551.578.1 : 546.17(94)

INFLUENCE OF WEATHER CONDITIONS ON THE AMOUNTS OF NITROGEN ACIDS IN THE RAINFALL AND ATMOSPHERE IN AUSTRALIA.[1]

Prof. ORME MASSON, Chairman.

During the period March 15, 1916, to March 31, 1916, daily samples of rain water collected at 16 stations suitably distributed over the continent of Australia have been quantitatively examined for nitric and nitrous nitrogen. Altogether about 1,000 samples have been examined. The results, when compared with the daily weather records and isobaric charts, confirm the following conclusions drawn from the results of experiments previously [1912–1914] conducted by V. G. Anderson at Canterbury, Victoria:[2]

(1) For a given type of weather *the concentration* of oxidized nitrogen in the rainfall varies inversely as the amount of rainfall.

(2) *The total amount* of oxidized nitrogen per unit area, found in the rainfall accompanying a storm, depends on the type of weather [Antarctic control, tropical control, divided control], and is practically independent of the amount of rainfall.

The work carried out during 1916 has also shown the following:

(3) Antarctic storms at different stations carry down amounts of oxidized nitrogen which do not differ greatly from the amounts previously found at Canterbury.

(4) Rain falling at northern stations [equatorward stations] during the prevalence of trade winds, contains amounts of oxidized nitrogen which are almost equal to the amounts found in the rain accompanying Antarctic depressions (rear isobars) at southern stations. This is shown to be probably due to the anticyclonic origin of winds accompanying both types of rain.

(5) Passage over land modifies anticyclonic air only to a slight extent; but if, during the passage, it is subjected to the influences accompanying monsoonal disturbances, comparatively large amounts of oxidized nitrogen are found in the subsequent rainfall.

(6) The highest total amounts of oxidized nitrogen are found at southern and inland stations in rain water resulting from monsoonal storms following a "heat wave."

(7) Rains occurring during "divided control" weather contain less oxidized nitrogen than tropical rains, but more than Antarctic rains.

(8) The nitrogen-fixing powers of inland monsoonal depressions tend toward the gradual enrichment, in respect of oxidized nitrogen, of the soil in southeastern Australia.

A number of determinations of the volume concentration of nitrogen peroxide in the atmosphere during the prevalence of anticyclonic weather has shown that at Canterbury, Victoria, in the rear circulation of anticyclones the air contains a greater proportion of nitrogen peroxide than the air of the front circulation.

On the assumption that the oxidized nitrogen of the rainfall is derived from the atmosphere, the amounts of nitrogen peroxide in the latter were compared with the amounts of oxidized nitrogen found in the rainfall at Canterbury for the corresponding weather types. It is shown that air containing 0.56 volume of nitrogen peroxide per 10^9 volumes in the rear of an anticyclone, would require to be washed out to a height of about 4,000 feet above ground-level in order to give the amount of oxidized nitrogen usually found in the rainfall accompanying this weather condition. Similarly, in the case of the front of an anticyclone, it is shown that the height would require to be about 3,100 feet. The above are in fair agreement with the average altitude of rain clouds (base), which according to leading authorities is about 3,500 feet.

[1] *Report of Committee, reprinted from* Report of the 86th Meeting of British Association for the Advancement of Science, Newcastle-on-Tyne, Sept. 5–9, 1916. London, 1917. 8°. pp. 128–129.

[2] *Anderson, V. G.* Abstract in MONTHLY WEATHER REVIEW, July, 1915, 43 : 345–6. Published in full in Quart. jour., Roy. met'l soc., 1915, 41 : 99 and ffg.

LUNAR PERIOD IN THE RATES OF EVAPORATION AND RAINFALL.

By J. R. SUTTON.

(Abstract of paper before the Royal Society of South Africa, Cape Town, Aug. 15, 1917.)

[*Reprinted from* Nature, London, Oct. 25, 1917, 100 : 160.]

The paper directs attention to the possibility of a lunar influence governing the evaporation from a water surface, and a lunar period in the incidence of rainfall. Tables are given showing that as the result of hourly observations of evaporation and rainfall during the 120 lunar months from August, 1899, to April, 1909, rainfall has its maximum frequency about the time of moonrise and its minimum just after moonset; also that the rate of evaporation has a maximum and minimum, respectively, shortly after the moon passes the meridian above and below the horizon.

The reader will find an adequate discussion of lunar influences on determining meteorological elements in this REVIEW, April, 1915, pp. 179–181.—C. A. jr.

John West James, 1838-1917.

The following note is reprinted from Climatological Data for Illinois, October, 1917:

Mr. John West James, cooperative observer at Riley, McHenry County, Ill. (P. O. Marengo), died October 31, 1917, at the age of 79. Mr. James came to Illinois from New York in 1860. He began his work as voluntary observer for the Government in October of that year, and continued almost without interruption until the time of his last illness, thus completing a gratuitous service of 57 years, the longest record made by any cooperative observer in Illinois, and, no doubt, one of the longest in the United States. This entire record was made on the same farm. Mr. James was a close student of astronomy and meteorology, in both of which he was well versed. His reports were relied on as practically infallible, and the Weather Bureau has lost one of its most efficient and painstaking observers.—*C. J. Root, Section Director.*